

SOLAR RADIATION DATA FOR MARCH 1949

Explanation of tables 1 and 2 and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the MONTHLY WEATHER REVIEW, vol. 72, No. 1, January 1944, p. 43. A list of pyrheliometric stations is given on page 45 of that issue. An explanation of the formula used in computing the air mass values for each station listed in table 1 appears in vol. 75, No. 3, March 1947, p. 47.

In mid-March, Eppley 180° pyrheliometers and Brown integrating potentiometers were installed at the Weather Bureau Airport offices in Albany, N. Y., and Portland, Maine.

The coordinates of the Albany station are latitude 42° 45' N.; longitude 75°48' W.; and elevation 94 meters. There are no serious obstructions to the free horizon, although the airport beacon to the WSW will create momentary shading near sunset in early spring and late autumn. Located within the triangle formed by Troy, Albany, and Schenectady, industrial smoke from one or more of these cities may be expected to vitiate the record to some extent.

The coordinates of the Portland station are latitude 43°39' N.; longitude 70°19' W.; and elevation 10 meters. The horizon offers few obstructions to the instrument, except to the north where the glass-enclosed control tower shades an appreciable amount of radiation from the northern sky.

Starting with March 5, 1949, with the Albany record and March 24, 1949, with the Portland record, daily totals and weekly means of total solar and sky radiation received on a horizontal surface at these stations will appear regularly in table 2.

TABLE 1.—Solar radiation intensities during March 1949—Con.

Date	Sun's zenith distance								Vapor pressure		
	A. M.				0.0°	P. M.				7:30 a. m. ¹	1:30 p. m. ¹
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		

BLUE HILL, MASS.

	Air mass									mb.	mb.
	4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
March	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.		
3	1.03	1.11	1.24	1.37	1.38	1.19	1.06	0.94		1.4	1.7
4	.90	.94		1.23	1.28	1.10	.95			1.8	2.5
9	1.02	1.15	1.26	1.39	1.41	1.26	1.14	1.03		4.1	5.8
14	1.00	1.11	1.24	1.39	1.38	1.23	1.12	1.03		2.6	2.8
16	.38	.47			1.27	1.14	1.04			1.5	1.5
17	1.12	1.20	1.30	1.45	1.38	1.22	1.06	.94		3.6	2.2
19	1.05	1.16	1.29	1.42	1.09	.95	.73	.64		1.0	1.6
20	.78	.90	1.02	1.18						0.9	1.4
24										5.6	5.9
29										4.8	4.8
Means	.91	1.00	1.22	1.35	1.33	1.18	1.04	.93			
Departures	+.03	+.03	+.13	+.11	+.09	+.13	+.10	+.10			

LINCOLN, NEBR.

	Air mass									mb.	mb.
	4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
March	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.		
25	0.88	0.96	1.09	1.22	1.36					5.3	6.3
Means	.88	.96	1.09	1.22	1.36						
Departures	+.06	+.03	+.01	-.05	-.14						

TABLE MOUNTAIN, CALIF.

	Air mass									mb.	mb.
	3.76	3.01	2.26	1.51	*0.75	1.51	2.26	3.01	3.76		
March	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.		
8	1.22	1.30	1.40	1.50							
12	1.13	1.24	1.36	1.49							
17				1.45							
18	1.03	1.12	1.25	1.42							
27											
Means	1.13	1.22	1.34	1.47							
Departures	.00	.00	+.01	+.01							

BOSTON, MASS.

	Air mass									mb.	mb.
	4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
March	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.		
4	0.81	0.93								1.9	2.7
9	.85	.90	1.01	1.32		1.39	1.24			3.6	6.1
14	.90	.99	1.15	1.36		1.35				2.6	2.1
16		.91	1.15	1.40		1.34	1.27	1.15		1.5	1.5
17				1.42		1.32	1.19			3.5	2.1
Means	.85	.93	1.10	1.38		1.35	1.23	1.15			
Departures	+.23	+.22	+.24	+.31		+.22	+.24	+.37			

*Extrapolated
¹ 75th Meridian Time.

NOTE.—Figures in parenthesis are interpolated.

TABLE 1.—Solar radiation intensities during March 1949

[Gram calories per minute per square centimeter of normal surface]

Date	Sun's zenith distance								Vapor pressure		
	A. M.				0.0°	P. M.				7:30 a. m. ¹	1:30 p. m. ¹
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°		

MADISON, WIS.

	Air mass									mb.	mb.
	4.81	3.84	2.88	1.92	*0.96	1.92	2.88	3.84	4.81		
March	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.		
1	0.79	0.96	1.10	1.14		1.25				0.8	1.6
4						1.21				6.1	6.4
7	.90	1.03	1.15	1.33						2.2	3.1
10	.92	1.08	1.16	1.35						1.7	2.2
11	.87	.99	1.15	1.31						1.9	1.9
12	.95	1.07	1.21	1.35						1.7	1.7
15	.90	1.02	1.14	1.33		1.31				.9	1.4
17	.91	1.03	1.18	1.34		1.16				1.4	1.6
19	.92	1.03	1.15	1.26						1.3	2.1
28	.71	.86	1.02	1.21						5.8	5.8
Means	.87	1.01	1.14	1.29		1.24					
Departures	+.06	+.06	+.04	+.02		-.04					

TABLE 2.—Daily totals and weekly means of solar radiation (direct+diffuse) received on a horizontal surface during March 1949

(Gram-calories per square centimeter)

Date	Honolulu, T. H.	Pearl Harbor, T. H.	La Jolla, Calif.	Riverside, Calif.	Santa Maria, Calif.	Inyokern, Calif.	Oak Ridge, Tenn.	Nashville, Tenn.	Fresno, Calif.	Davis, Calif.	Washington, D. C.	Columbia, Mo.	Soia Springs, Calif.	Grand Lake, Colo.	New York, N. Y.	Salt Lake City, Utah	State College, Pa.	Lincoln, Nebr.	Newport, R. I.	Put-in-Bay, Ohio	East Wareham, Mass.	Blue Hill, Mass.	Doston, Mass.	Ithaca, N. Y.	Twin Falls, Idaho	Albany, N. Y.	East Lansing, Mich.	Madison, Wis.	Portland, Maine	Toronto, Canada	Summit, Mont.			
1949	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.			
Feb. 26	381	417	127	76	231	355	425	110	124	351	351	321	485	426	248	382	147	246	265	108	64	92	71	400	400	295	280	374	350	374	350			
Feb. 27	610	503	220	215	203	25	64	155	421	238	168	456	503	521	278	429	149	428	256	419	429	374	235	383	137	128	287	287	(375)	287	(375)			
Feb. 28	368	329	269	198	465	420	447	262	222	207	458	(412)	333	35	267	147	429	44	137	64	66	61	13	298	259	415	73	374	374	374	374			
Mar. 1	428	281	396	431	370	451	468	292	162	362	410	202	275	392	352	422	299	156	420	40	114	110	124	330	329	394	383	(373)	383	(373)	383	(373)		
Mar. 2	583	433	388	196	363	397	413	194	176	399	415	121	516	452	321	352	282	457	156	456	458	495	265	246	69	92	262	365	262	365	262	365		
Mar. 3	633	545	380	334	477	443	385	108	80	273	250	(75)	456	364	399	358	157	465	392	413	429	352	152	317	221	76	407	302	407	302	407	302		
Mar. 4	489	423	429	346	271	440	445	400	274	378	431	543	515	310	410	189	397	465	194	443	457	320	133	373	118	339	64	274	64	274	64	274		
Means	499	419	316	257	354	361	378	217	209	316	359	309	340	323	324	326	259	323	265	277	288	242	143	335	204	246	263	345	263	345	263	345		
Departures	-35	-37	-55	-85			+106	-134	-96	+37	+81	+5	+26	+74	+28	+92	-42	+46	+40	+23	+7	+33	-66	+46	-11	-23	+65	+51	+65	+51	+65	+51		
Mar. 5	598	542	422	408	528	429	441	445	224	310	448	332	344	392	298	272	399	283	286	261	351	285	144	169	297	166	280	116	154	116	154	116	154	
Mar. 6	623	566	381	391	443	126	335	362	372	222	214	494	380	351	358	102	218	279	236	268	296	185	54	330	169	241	306	221	96	221	96	221	96	
Mar. 7	506	459	432	326	496	494	479	214	379	494	361	240	429	472	183	502	219	249	451	199	176	162	313	239	394	396	380	374	58	374	58	374	58	
Mar. 8	594	584	485	512	539	349	231	417	388	473	58	484	319	476	194	352	49	119	370	77	223	230	240	324	448	113	122	175	232	175	232	175	232	
Mar. 9	646	599	455	492	456	54	53	132	93	264	21	153	413	404	326	201	358	467	47	191	430	456	153	288	490	55	338	27	444	27	444	27	444	
Mar. 10	659	600	485	504	568	37	59	122	123	76	456	139	237	73	345	51	220	80	72	77	89	92	45	324	96	204	421	32	467	32	467	32	467	
Mar. 11	552	295	451	475	293	503	466	266	102	393	288	150	423	97	308	242	195	41	444	113	36	48	51	173	161	279	394	229	470	229	470	229	470	
Means	597	521	444	442	475	285	301	284	240	319	264	284	363	293	274	252	237	216	291	170	221	208	143	261	292	207	333	168	281	168	281	168	281	
Departures	+33	+23	+21	+18	+17	-112	-106	+7	-37	-38	-31	+19	+19	-38	-22	-84	-79	+6	-94	-65	-58	-97	-80	-43	+34	-43	+34	-84	-21	-84	-21	-84	-21	
Mar. 12	393	348	484	428	547	488	326	504	318	386	198	390	258		277	242	357	345	537	276	309	319	121	302	320	315	477	371	235	371	235	371	235	
Mar. 13	650	615	420	398	480	147	194	446	425	508	509	457	574		445	485	59	343	491	345	407	423	276	423	368	404	352	447	165	447	165	447	165	
Mar. 14	629	553	463	442	499	207	311	514	244	463	199	358	274	411	421	375	196	518	236	493	526	484	249	373	518	270	338	148	446	148	446	148	446	
Mar. 15	492	474	309	345	427	219	427	262	148	154	561	457	505	221	416	324	433	233	471	261	335	329	184	250	343	233	439	415	123	415	123	415	123	
Mar. 16	518	530	484	440	574	549	497	556	383	490	107	194	518	598	193	329	303	540	232	517	552	516	156	263	516	215	225	260	168	260	168	260	168	
Mar. 17	602	695	475	501	566	60	32	477	368	268	48	519	452	483	472	448	249	501	514	473	532	431	293	343	392	436	479	439	410	439	410	439	410	
Mar. 18	648	604	306	492	582	213	237	545	356	103	577	494	472	71	422	219	510	41	460	42	49	12	165	382	94	229	394	463	224	463	224	463	224	
Means	562	533	422	435	525	269	280	472	320	338	314	410	407	345	378	346	397	374	420	344	403	366	268	331	364	300	303	368	253	368	253	368	253	
Departures	-31	-10	+30	+39			+3	+64	-40	+17	-13	+42	+5	+62	+48	+74	-31	+56	+116	+42	+92	+63	-25	00	+40	+78	+79	-26	+79	-26	+79	-26		
Mar. 19	565	480	369	299	536	524	457	73	256	460	268	195	520	568	461	525	457	589	496	568	605	535	216	232		272	430	467	235	467	235	467	235	
Mar. 20	682	642	494	510	598	515	533	536	518	451	500	562	294	496	188	542	381	583	464	580	598	522	265	488	508	282	347	374	158	374	158	374	158	
Mar. 21	683	562	522	501	541	459	379	383	465	452	51	313	502	422	506	407	26	460	459	422	434	354	213	302	430	298	243	277	233	277	233	277	233	
Mar. 22	569	511	428	347	601	130	236	256	231	256	78	237	388	331	176	194	318	341	193	389	352	312	142	124	371	119	81	56	(500)	56	(500)	56	(500)	
Mar. 23	671	636	457	376	628	309	408	483	355	374	415	207	502	206	163	96	286	192	176	90	82	68	84	165	152	111	339	171	(520)	171	(520)	171	(520)	
Mar. 24	705	642	295	290	420	424	465	509	566	436	440	(448)	314	488	193	518	451	526	464	511	537	471	239	333	482	289	407	427	250	440	250	440	250	
Mar. 25	681	630	548	532	619	248	340	543	476	78	366	562	488	124	392	115	486	388	397	428	395	349	57	340	277	439	310	384	160	218	160	218		
Means	651	586	445	404	563	372	403	398	410	358	307	369	430	376	288	342	344	427	375	427	429	373	177	269		269	308	251	329	251	329	251	329	
Departures	+28	+14	+3	+8	+72	-49	+17	-19	-40	+0	+44	-40	+44	-42	+28	-37	+29	+44	+82	+55	+56	-102	-121		-36	-25	-27	+8	-27	+8	-27	+8		
Mar. 26	698	592	466	507	596	373	315	602	583	97	132	398	458	244	416	161	48	349	116	201	373	303	142	396	332	61	67	291	207	163	207	163	207	163
Mar. 27	622	631	533	516	618	77	114	534	439	323	370	202	395	261	111	188	547	187	514	242	177	107		288	254	190	107	69	120	69	120	69	12	